WHAT IS CLAIMED IS:

1. A processing apparatus which has a first electrode and a second electrode, arranges a substrate between the first and second electrodes, and supplies a current between the first and second electrodes through a chemical solution and the substrate to process the substrate, comprising:

a shower head which is arranged between the first electrode and the substrate to form a chemical solution flow in a shower form toward the substrate,

wherein the chemical solution flow in the shower form formed by said shower head forms part of a current path between the first and second electrodes.

2. The apparatus according to claim 1, further comprising another shower head which is arranged between the second electrode and the substrate to form a chemical solution flow in a shower form toward the substrate.

3. The apparatus according to claim 1, wherein said shower head has a member having a plurality of openings, and the chemical solution in the shower form is injected or discharged through the plurality of openings.

4. The apparatus according to claim 3, wherein a surface of the member, which has the plurality of openings, is arranged substantially parallel to the substrate.

5. The apparatus according to claim 1, further comprising a circulation mechanism which recovers the chemical solution injected or discharged from said shower head and supplies the chemical solution again to said shower head.

6. A processing method of arranging a substrate between a first electrode and a second electrode and supplying a current between the first and second electrodes through a chemical solution and the substrate to process the substrate, comprising a step of:

arranging a shower head at least at one of a position between the first electrode and the substrate and a position between the second electrode and the substrate, causing the shower head to form a chemical solution flow in a shower form toward the substrate, and causing the chemical solution flow in the shower form to form part of a current path between the first and second electrodes.

7. An anodizing method of arranging a substrate between a first electrode and a second electrode and supplying a current between the first and second electrodes through a chemical solution and the substrate to anodize the substrate, comprising a step of:

arranging a shower head at least at one of a position between the first electrode and the substrate

and a position between the second electrode and the substrate, causing the shower head to form a chemical solution flow in a shower form toward the substrate, and causing the chemical solution flow in the shower form to form part of a current path between the first and second electrodes.

8. A processing apparatus which has a first electrode arranged above a substrate to oppose the substrate and a second electrode arranged under the substrate to oppose the substrate and executes a chemical process for the substrate, comprising:

a chemical solution container which fills a space between the substrate and the second electrode with a chemical solution; and

a mechanism which forms a flow of the chemical solution near a lower surface of the substrate,

wherein said mechanism has a function of causing the chemical solution to overflow from said chemical solution container.

9. The apparatus according to claim 8, wherein said chemical solution container is configured to bring the chemical solution into contact with the lower surface of the substrate.

10. The apparatus according to claim 8, wherein said chemical solution container has a plate which has one or a plurality of openings and opposes the substrate, and the chemical solution flows toward the substrate

through the openings of the plate.

11. The apparatus according to claim 10, wherein the plate is arranged at an upper portion of said chemical solution container.

12. The apparatus according to claim 8, wherein the second electrode has one or a plurality of openings, and the chemical solution flows toward the substrate through the openings of the second electrode.

13. The apparatus according to claim 12, wherein the second electrode having the openings is arranged at an upper portion of said chemical solution container.

14. The apparatus according to claim 8, further comprising a holding portion which supports an outer peripheral wall portion of the substrate.

15. The apparatus according to claim 8, wherein a diameter of a cross-section of said chemical solution container near the substrate is substantially the same as that of the substrate.

16. The apparatus according to claim 8, wherein said chemical solution container has an overflow container to be filled with the chemical solution on an outer side thereof.

17. A semiconductor substrate manufacturing method comprising steps of:

anodizing a first substrate in accordance with an anodizing method of claim 7 to form a porous layer;

forming a non-porous layer on the porous layer;

bonding the first substrate having the non-porous layer to a second substrate via an insulating layer to prepare a bonded substrate stack; and

processing or fabricating the bonded substrate stack to obtain a state in which the porous layer at least partially remains on the second substrate.

18. A semiconductor substrate manufacturing method comprising steps of:

anodizing a first substrate by using a processing apparatus of claim 8 to form a porous layer;

forming a non-porous layer on the porous layer;

bonding the first substrate having the non-porous layer to a second substrate via an insulating layer to prepare a bonded substrate stack; and

processing or fabricating the bonded substrate stack to obtain a state in which the porous layer at least partially remains on the second substrate.